

A Review of the Family Melandryidae (Coleoptera) in Korea

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Abstract Thirteen species belonging to nine genera of the family Melandryidae are recognized from Korea. Among them, eight species (*Orchesia imitans* Lewis, *Dircaea erotyloides* Lewis, *Dircaeomorpha elegans* Sasaji, *Mikadonius gracilis* Lewis, 1895, *Enchodes orientalis* Nikitsky, *Phloeotrya obscura* (Lewis), *P. rugicollis* Lewis, and *Melandrya mongolica* Solsky) are reported for the first time from Korea. Keys for subfamilies, genera, and species are given, and illustrations of adults and male genitalia are provided.

Key words Coleoptera, Melandryidae, Systematics, review, Korea

INTRODUCTION

The first known species of melandryids from the Korean peninsula was *Paradircaea dentatamaculata* (Lewis), which was collected from Mt. Soyo-san by Gaku and Kazuro (1937). After then, Akio and Saburo (1937) reported *Phloeotrya bellicosa* Lewis from Mt. Odae-san. Cho (1968) reported two additional species, *Serropalpus barbatus* (Schaller) and *Melandrya karafutona* Kôno, from Korea without detailed localities. Kim and Kim (1972) added *Melandrya niponica* Lewis (a junior synonym of *Melandrya dubia* (Schaller)) from Muju. Recently, *Melandrya modesta* Lewis and *Mikadonius gracilis* Lewis were added by Kim *et al.* (1995) and Park (1996). Kim (1998) reported *Serropalpus filiformis* Marseul, but it is probably a misidentification of *S. barbatus*.

Melandrya flavonotata Pic which has been cited with some uncertainties in the "Check List of Insects from Korea (1994)" was reconfirmed, based on recent collecting materials. The previously known species in the Korean peninsula; *Orchesia ocularis* Lewis which the first reporter from Korea was not known *Melandrya karafutona* Kôno by Cho (1969), and *Melandrya modesta* Lewis by Kim *et al.* (1995), were not found during this study.

The specimens examined are based on the following organizations: Center for Insect Systematics, Chuncheon [CIS]; Sungshin Women's University, Seoul [SWU]; Gyeongsang National University, Jinju [GSNU]; National Sericulture Entomology Research Institute, Suweon [NSERI]; National Science Museum,

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Daejeon [NSM]; Korea Forest Research Institute, Seoul [KFRI]; Seoul National University, Suwon [SNU]; National Institute of Agricultural Science and Technology, Suwon [NIAST]. TL: Type locality. Abbreviations for provinces in Korea are as follows; GG: Gyeonggi-do, GW: Gangwon-do, CB: Chungcheongbug-do, CN: Chungcheongnam-do, JB: Jeollabug-do, JN: Jeollanam-do, GB: Gyeongsangbug-do, GN: Gyeongsangnam-do, JJ: Jeju-do.

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SYSTEMATICS

Family MELANDRYIDAE

Key to subfamilies of the family Melandryidae

1. Front coxa separated by a narrow prosternal process Orchesiinae
- Front coxa not separated by a prosternal process Melandryinae

Subfamily ORCHESIINAE 갈색긴썩덩벌레아과

Genus *Orchesia* Latreille, 1807

Orchesia imitans Lewis, 1895 호리긴썩덩벌레 (新稱)

(Figs 1, 14)

Orchesia imitans Lewis, 1895, Ann. Mag. nat. Hist., Ser. (6) 15: 261 [TL: Japan].

Diagnosis. Body length 3.5–4.5 mm. Body dark brown to blackish brown with reddish elytral markings. Terminal segments of maxillary palpus cultiform. Four apical segments of antenna distinctly thickened. Sternopleural suture incomplete. Elytra subparallel-sided, more than two times as long as maximum width, provided with reddish bands and blackish spots as follows: rather broad, longitudinal and reddish lateral bands extending from base to apical one-third; small and black maculae at the middle of both sides; transverse curved band at preapical portion reaching both suture and lateral margin. Midleg and hindleg with two spurs; hindtibial spurs 0.7 times as long as 1st tarsal segments.

Male genitalia. Aedeagus with parameres pointed apically; parameres longer than median lobe; apex of median lobe pointed.

Materials examined. [CIS] 1 ♂, KNU Campus, Chuncheon, GW, 10 V 2001 (HS Eom); [NIAST] 1 ♂, Seongpan-ak, JJ, 10 II 1999 (SH Lee).

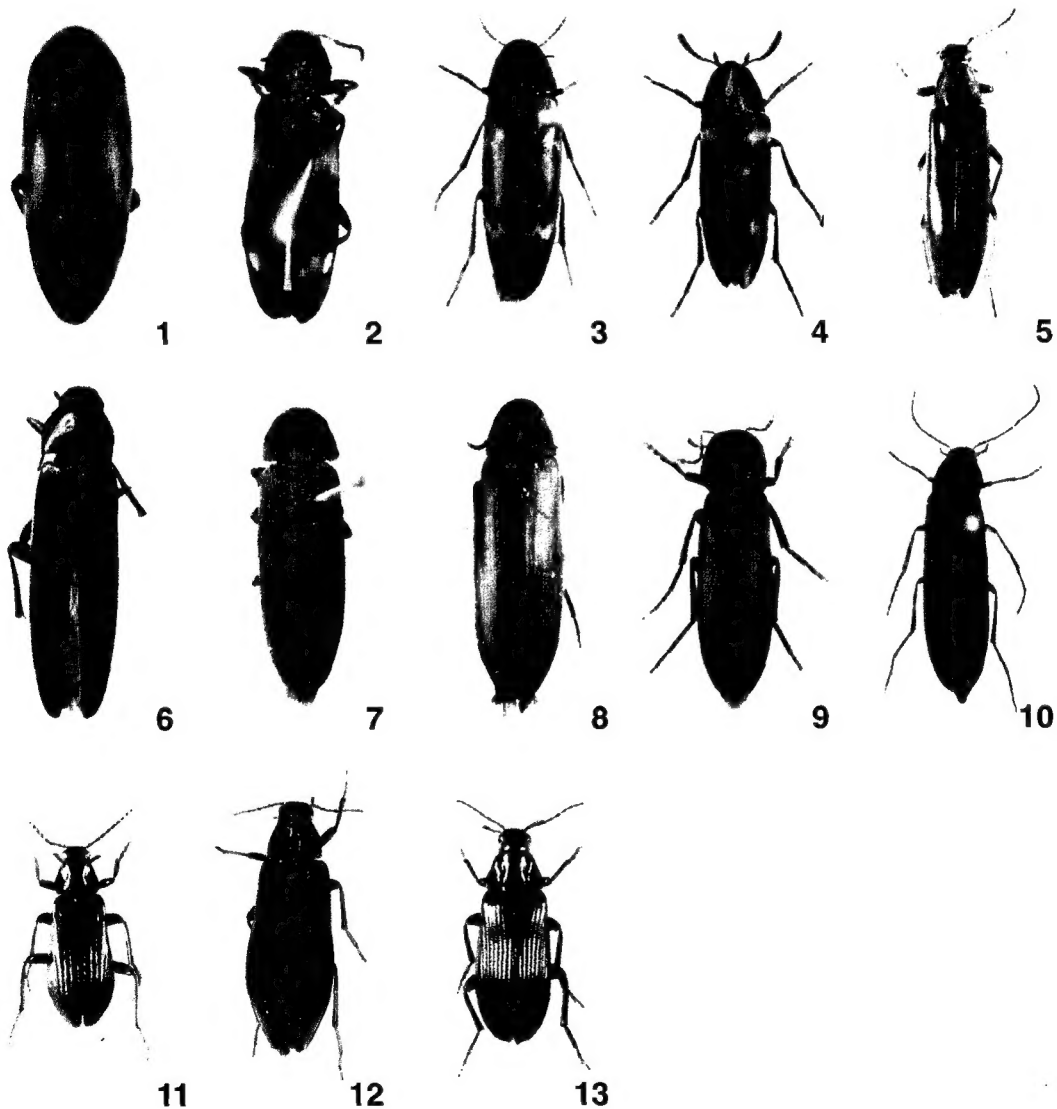
Distribution. Korea (new record), Japan, Russian Far East (Sakhalin).

Subfamily MELANDRYINAE 긴썩덩벌레아과

Key to genera of the subfamily Melandryinae

1. Body elongate, more or less cylindrical. Pronotum closely connected with elytral base; base almost as

- wide as humeral width; medio-lateral portions not depressed 2
 – Body broad and flat; Pronotum loosely connected with elytral base and sometimes concealing it;
 medio-lateral portions more or less broadly depressed *Melandrya*
 2. Head with eyes invisible or scarcely visible from above 3
 – Head with eyes well visible from above 6
 3. Antennae gradually clavate towards apices *Dircaeomorpha*



Figs 1-13. Adults: 1. *Orchesia imitans* Lewis; 2. *Paradircaea dentatomaculata* (Lewis); 3. *Dircaea erotyloides* Lewis; 4. *Dircaeomorpha elegans* Sasaji; 5. *Mikadonius gracilis* Lewis; 6. *Enchodes orientalis* Nikitsky; 7. *Phloeotrya bellicosa* Lewis; 8. *Phloeotrya obscura* (Lewis); 9. *Phloeotrya rugicollis* Lewis; 10. *Serropalpus barbatus* (Schaller); 11. *Melandrya dubia* (Schaller); 12. *M. flavonotata* Pic; 13. *M. mongolica* Solsky.

- Antennae filiform 4
- 4. Third segments of maxillary palpi nearly as wide as 4th. Hind coxae very narrowly separated *Phloeotrya*
- Third segments of maxillary palpi narrower than 4th. Hind coxae contiguous 5
- 5. Pronotal disc scabrose and somewhat rugose with lateral margins, sharp edged, flattened and raised *Paradircaea*
- Pronotal disc not so scabrose with lateral margins moderately edged only near base *Dircaea*
- 6. Third segments of hind tarsi much shorter than the fourth, more or less dilated *Mikadonius*
- Third segments of hind tarsi slightly shorter than 4th, cylindrical 7
- 7. Maxillary palpi flattened and strongly serrate *Serropalpus*
- Maxillary palpi simply elongate and subcylindrical *Enchodes*

Genus *Paradircaea* Nikitsky, 1998

***Paradircaea dentatomaculata* (Lewis, 1895) 두쌍무늬긴썩덩벌레**

(Figs 2, 15)

Dircaea dentato-maculata Lewis, 1895, Ann. Mag. nat. Hist., Ser. (6) 15: 267–268 [TL: Japan].

Paradircaea dentatomaculata: Nikitsky, 1998: 44.

Diagnosis. Body length 8.5–10.5 mm.

Materials examined. [CIS] 2 ♂, Mt. Daemo-san, Seoul, 11 V 1997 (HC Park).

Distribution. Korea, Japan.

Remarks. This species was first reported from Mt. Soyo-san, Korea by Gaku and Kazuro (1937).

Genus *Dircaea* Fabricius, 1798

***Dircaea erotyloides* Lewis, 1895 알긴썩덩벌레 (新稱)**

(Fig. 3)

Dircaea erotyloides Lewis, 1895, Ann. Mag. nat. Hist., Ser. (6) 15: 267; Sasaji, 1985: 360, 365;

Nikitsky, 1989: 53–55; Toyoshima *et al.*, 1991a: 30.

Phloeotrya erotyloides: Nakane, 1963: 242; Sasaji, 1974: 7.

Diagnosis. Body length 10–12 mm. Body elongate, black, feebly shining. Pronotum longer than width. Elytra with two pairs of scarlet markings which dentate, sinuate, not touching both of lateral and sutural edges. Lateral side of each tibia with blackish ridges.

Materials examined. [CIS] 1 ♀, Hongleung, Seoul, 8 VI 1999 (KS Oh); 1 ♀, Gwangleung, GG, 13 VII 2000 (HS Eom); 1 ♀, Oweol-ri, Chuncheon, GW, 25 VI 2001 (JC Sohn); [GSNU] 1 ♀, Mt. Halla-san, JJ, 18 VI 1973 (JS Park).

Distribution. Korea (new record), Japan.

Remarks. The specimens examined appears to be an intermediate one between the nominate

subspecies and ssp. *ussuriensis* Nikitsky (1985c). A further study is needed for its subspecific status.

***Dircaeomorpha* Fairmaire, 1896**

***Dircaeomorpha elegans* Sasaji, 1974 주홍무늬긴썩덩벌레 (新稱)**

(Fig. 4)

Dircaeomorpha elegans Sasaji, 1974, Mem. Fac. Educ. Fukui Univ., Ser. II, Nat. Sci., 24: 1–13; Sasaji, 1985: 365; Nikitsky, 1989: 47–48.

Diagnosis. Body length 11 mm. Body black, dully shining. Antenna gradually clavate towards apex. Pronotum with a median longitudinal suture. Sternopleural suture invisible. Elytra with two pairs of dentate orange markings; anterior markings on humeri reserving black spots. This species is very similar to *Dircaea eroyloides* Lewis in the pattern of elytral marking and the body shape, but it differs from *D. erotyloides* by the oval black spots on humeral corners of elytra and the clavate antenna.

Material examined. [KFRI] 1 ♀, Gwangleung, GG, 6. VII. 2001 (HG Kim).

Distribution. Korea (new record), Japan.

Genus *Mikadonius* Lewis, 1895

***Mikadonius gracilis* Lewis, 1895 황검정긴썩덩벌레 (新稱)**

(Fig. 5)

Mikadonius gracilis Lewis, 1895, Ann. Mag. nat. Hist., Ser. (6) 15: 264, 265, pl. 8; Nakane, 1963: 243; Sasaji, 1985: 367; Nikitsky, 1989: 43, 44; Park, 1996: 176.

Diagnosis. body length 10–16 mm. Body black. Elytra usually entirely yellow, except for black lateral margins, sutural lines and hind parts, or sometimes entirely black. Pronotum sometimes almost entirely black, but mid-anterior and posterior parts of pronotum yellowish. Head longitudinally impressed along middle of vertex. Terminal joints of maxillary palpi triangular, longer than width of eye. Pronotum widened posteriorly. Lateral sides of elytra paralleled at basal two-thirds. Middle and hind tibiae of female with numerous fine crooked ridges on outer surface; sometimes fore tibiae also with crooked ridges.

Materials examined. [CIS] 1 ♀, Mt. Minjuji-san, Youngdong, JB, 25 VI 2000 (HG Kim); [GSNU] 2 ♂, Mt. Jiri-san, Sancheong, GN, 3 VI 1989 (CW Lee); 4 ♀, Mt. Jiri-san, Duryu-dong, Sancheong, GN, 3 VI 1989 (CW Lee); [NSM] 1 ♂, Mt. Gyeryong-san, CN, 24 V 1989 (SL Ahn); [SWU] 1 ♀, Mt. Jiri-san, Piagol, JN, 22 V 1999 (TM Han).

Distribution. Korea (new record), Japan.

Remarks. This species was first reported from Korea by Park (1996).

Genus *Enchodes* LeConte, 1968

Enchodes orientalis Nikitsky, 1973 갈색굵은수염긴썩덩벌레 (新稱)

(Figs 6, 16)

Enchodes orientalis Nikitsky, 1973, Zoologicheskii Zh., 52 (11): 1728–1730; Nikitsky, 1989: 51.

Diagnosis. Body length 16 mm. Body reddish brown to blackish brown and shining. Maxillary palpi slender; penultimate segment narrower than apical one. Pronotum usually with a pair of small and rounded depressions at middle in addition to basal deep foveae. Sternopleural suture not flanged. Mesosternal process emarginated apically. Hind coxa separated each other.

Material examined. [GSNU] 1 ♂, Baemsagol, Sannae-myeon, Namweon, JB, 24 VI 1986.

Distribution. Korea (new record), Russian Far East (Maritime Terr.).

Genus *Phloeotrya* Stephens, 1832

Key to species of the genus *Phloeotrya*

1. Sternopleural suture flanged *rugicollis* Marseul
– Sternopleural suture not flanged 2
2. Body rather small; pronotum longer than width, not so distinctly granulate middle; antenna 1–4 segments yellowish brown *obscura* (Lewis)
– Body large; pronotum not longer than width, bearing several distinct granulations middle; antenna brown *bellicosa* Lewis

Phloeotrya bellicosa Lewis, 1895 긴썩덩벌레

(Fig. 7)

Phloeotrya bellicosa Lewis, 1895, Ann. Mag. nat. Hist., (6), 15: 266; ESK & KSAE, 1994: 173 [TL: Japan].

Diagnosis. Body length 18 mm.

Material examined. [SNU] 1 ♀, Kohan (present correct locality uncertain), 22 VII 2595 (Mochizuki).

Distribution. Korea, Japan, Russian Far East (Ussuri, Sakhalin).

Remarks. This species was first reported from Mt. Odae-san, Korea by Akio and Saburo (1937).

Phloeotrya obscura (Lewis, 1895) 우단긴썩덩벌레 (新稱)

(Fig. 8)

Dircaea obscura Lewis, 1895, Ann. Mag. nat. Hist., (6) 15: 268.

Phloeotrya subcostulata Pic, 1953, Ann. Mag. nat. Hist., (12) 6.

Phloeotrya obscura: Sasaji, 1985.

Diagnosis. Body length 7–9.5 mm. Body dark brown. Maxillary palpus yellowish brown. Antenna with

1–3rd segments yellowish brown. Head and pronotum with densely granulate. Elytra with weakly visible seven striae.

Materials examined. [KFRI] 1 ♀, Gwangleung, GG, 6 VII 2001 (HG Kim); [CIS] 2 ♀, Hongleung, Seoul, 25 V 1999 (KS Oh); 1 ♀, KNU Campus, Chuncheon, GW, 10 V 2001 (JC Sohn); [NSM] 1 ♀, Mt. Unjang-san, JB, 5 V 1998 (SL Ahn).

Distribution. Korea (new record), Japan.

***Phloeotrya rugicollis* Marseul, 1876 꼬마긴썩덩벌레 (新稱)**

(Figs 9, 17)

Phloeotrya rugicollis Marseul, 1876, Ann. Soc. Ent. France, 6 (5): 334; Lewis, 1895: 266; Nakane, 1955: 192; Nakane, 1963: 242; Nikitskiy, 1972: 204; Nikitskiy, 1989: 57; Toyoshima *et al.*, 1991a: 31.

Dircaea rugicollis: Nikitskiy, 1985c: 59.

Diagnosis. Body length 7–14 mm. Body dark brown. Head and pronotum with densely granulate. Pronotum width almost equal to length, flanged laterally; central part peeled off; with longitudinal scar from middle to base. Elytra weakly visible with three or four striae.

Materials examined. [CIS] 1 ♀, Hongleung, Seoul, 23 VI 1999, (KS Oh); 1 ♀, Gwanaggu, Mt. Gwanag-san, Seoul, 8 VII 1997; [GSNU] 1 ♂, 1 ♀, Jwasan-ri, Sandong, Gurye, JN, 27 VIII 1990; 1 ♀, Temp. Hwaeom, Mt. Jiri-san, 2 VIII 1984; 1 ♀, Cheonmundae, Mt. Bohyeon-san, Jeongag-ri, Habugmyeon, Yeongcheon, GB, 10 VII 1998; 1 ♀, Jungsan-ri, Sacheon, Sancheong, GB, 27 VIII 1990; 1 ♂, Mt. Jeongjog-san, Ungchon, Ulsan, GB, 18 VI 1998; 1 ♀, Temp. Hwabang, Daegog-ri, Gohyeon, Namhae, GB, 24 VII 1998; 1 ♀, (without locality) 8 VI; [NIAS] 1 ♀, Mt. Yeogi-san, Suwon, GG, 1 VI 1991; [SNU] 1 ♀, Yangpyeong, GG, 22 VI 1992; 1 ♀, Gwanggyo, Suwon, GG, 26 V 1992; 1 ♀, Pocheon, GG, 19 VIII 1996; [SWU] 1 ♀, Mt. Cheonma-san, GG, 12 V 1989; 1 ♂, Mt. Odae-san, Sogeuimgang, Yoengog, Gangleung, GW, 24 VI 1998.

Distribution. Korea (new record), Japan, Russian Far East (Primorskii).

Genus *Serropalpus* Hellenius, 1786

***Serropalpus barbatus* (Schaller, 1783) 왕긴썩덩벌레**

(Figs 10, 18)

Mordella barbata Schaller, 1783, Abh. Hall. Naturf. Ges., I: 322.

Serropalpus niponicus Lewis, 1895, Ann. Mag. nat. Hist., (6) 15: 263.

Serropalpus barbatus: Kôno, 1930: 49; ESK & KSAE, 1994: 173.

Diagnosis. Body length 13–19 mm.

Materials examined. [GSNU] 1 ♂, Chuseong-dong, Hamyang, GN, 29 VII 1992; 1 ♀, Samjeong, Macheon, Hamyang, GN, 27 VII 1992 (MJ Seo); [SWU] 1 ♂, Mt. Odae-san, Sambong-yagsu, GW, 10 VIII 1997.

Distribution. Korea, Japan, Russian Far East (Sachalin, Siberia).

Remarks. *Serropalpus niponicus* Lewis was described from Fukushima Pref., Honshu, Japan, but it was synonymized with *S. barbatus* (Schaller) by Nikitsky (1989). This species was first reported from Korea by Cho (1968).

Genus *Melandrya* Fabricius, 1801

Key to species of the genus *Melandrya*

1. Intervals between striae of elytra alternately raised *dubia* (Schaller)
 – Intervals between all stria of elytra raised 2
2. Elytra with yellow spot and yellow apical bands *flavonotata* Pic
 – Elytra without markings, bluish shining *mongolica* Solsky

Melandrya dubia (Schaller, 1783) 대왕긴썩덩벌레

(Figs 11, 19)

Melandrya dubia Schaller, 1783; ESK & KSAE, 1994: 173.

Melandrya alternans Motsulsky, 1872, Bull. Soc. Nat. Moscou, III, 45 (2): 45–46.

Melandrya niponica Lewis, 1895, Ann. Mag. nat. Hist., (6) 15: 273.

Diagnosis. Body length 9–19 mm.

Materials examined. [SWU] 1 ♀, Mt. Deogyu-san, Muju-gun, JB, 25. V. 1993 (SY Ha); [NSM] 1 ♀, Mt. Odae-san, GW, 27. V. 1998 (SL Ahn).

Distribution. Korea, Japan, Mongolia, Russian Far East (Siberia, Maritime Terr., Sakhalin, Manchuria).

Remarks. *Melandrya niponica* Lewis was described from Fukushima Pref., Honshu, Japan and *M. alternans* Motschulsky from Primorye, Russia, but they were synonymized with *M. dubia* by Nikitsky (1985b). This species was first reported from Korea by Kim and Kim (1972).

Melandrya flavonotata Pic, 1938 얼룩긴썩덩벌레

(Figs 12, 20)

Melandrya flavonotata Pic, 1938, Notes diverses, nouveautes, L'Echange, 473: 11; ESK & KSAE, 1994: 173.

Melandrya quadrisignata Nakane et Hayashi, 1955, Col. Ill. Ins. Japan. Coleoptera: 192.

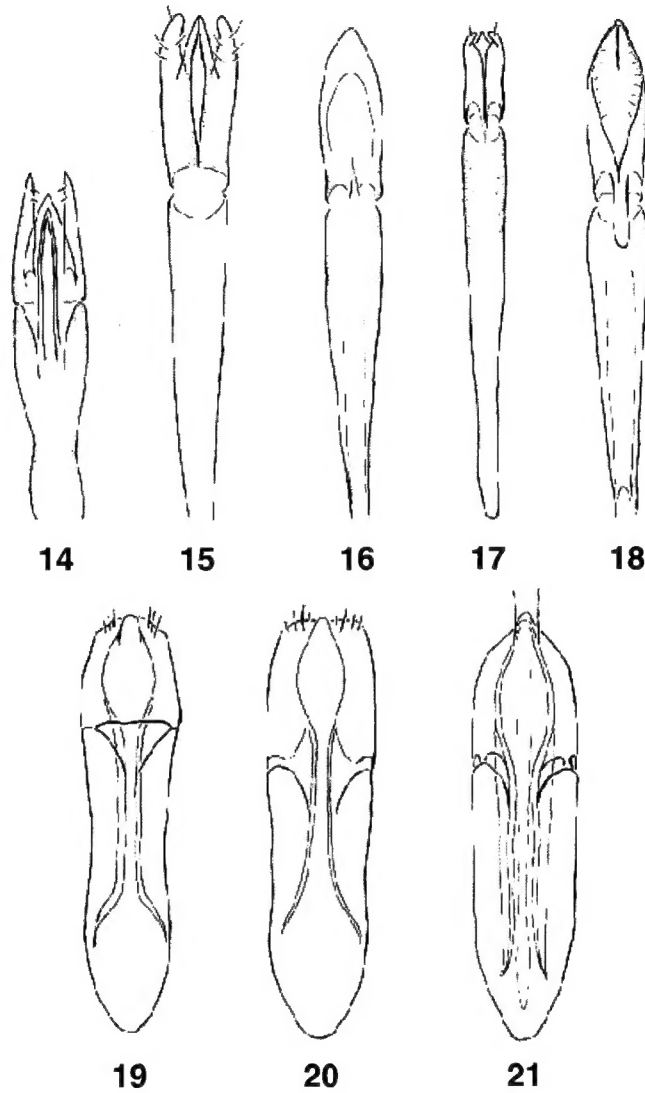
Diagnosis. Body length 10–12 mm.

Male genitalia. Aedeagus with 8 setae on dorsal surface apically.

Materials examined. [SWU] 1 ♂, Mt. Deogyu-san, Muju, JB, 25. V. 1993 (JS Yang); [NSM] 1 ♂, 1 ♀, Mt. Bocheon-san, GB, 10. V. 1998 (SL Ahn).

Distribution. Korea, Japan, Russian Far East (Primorye, Amur, Maritime Terr.).

Remarks. *Melandrya quadrisignata* Nakane et Hayashi was described from Aomori Pref., Honshu, Japan, but it was synonymized with *M. flavonotata* Pic by Nikitsky (1985b).



Figs 14-21. Male genitalia: 14. *Orchesia imitans* Lewis; 15. *Paradircaea dentatamaculata* (Lewis); 16. *Enchodes orientalis* Nikitsky; 17. *Phloeotrya rugicollis* Lewis; 18. *Serropalpus barbatus* (Schaller); 19. *Melandrya dubia* (Schaller); 20. *M. flavonotata* Pic; 21. *M. mongolica* Solsky.

***Melandrya mongolica* Solsky, 1871 청긴썩덩벌레 (新稱)**

(Figs 13, 21)

Melandrya mongolica Solsky, 1871: Nikitskiy, 1972: 205; Sasaji, 1989: 402; Toyoshima *et al.*, 1991b: 16, 17.

Diagnosis. Body length 9–16 mm. Body black, bluish shining. Pronotum with well developed longitudinal depression, extending from apical margin to basal one.

Male genitalia. Aedeagus with two long setae on dorsal surface apically.

Materials examined. [CIS] 1 ♀, Mt. Yongmun-san, Yangpyeong, GG, 2 VI 2000 (HS Eom); 1 ♂, Mt. Chugryeong-san, Gapyeong, GG, 17 V 2001 (HS Eom); 1 ♂, KNU Campus, Chuncheon, GW, 3 V 2001 (HL Han); 2 ♂, 1 ♀, Mt. Geumbyeong-san, Shinnam, Chuncheon, GW, 12 V 2001 (HS Eom); 1 ♂, Seosang-ri, Chuncheon, GW, 7 VI 2000 (HS Eom); [GSNU] 1 ♂, 1 ♀, Mt. Minjuji-san, Naebug-dong, Daebul-ri, Seolcheon-myeon, Muju, JB, 21 V 2000 (JH Sohn); [SWU] 1 ♀, Mt. Surag-san, Seoul, 8 V 1998 (BS Kim); 1 ♂, Mt. Namhan-san, Seongnam, GG, 23 V 1999 (EH Choi); 1 ♂, I. Gangwha, Incheon, GG, 10 V 1997 (JY Kim); 1 ♂, Mt. Gyeonggang-san, Pyeongchang, GW, 16 VI 1993 (JL Kim); 1 ♀, Mt. Taebaeg-san, Danggungag, GW, 30 V 1999 (SH Woo); 1 ♂, Temp. Baegdam, Injae, GW, 25 V 1986 (GS Jang).

Distribution. Korea (new record), Japan, Russian Far East (Maritime Terr).

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